

TEST REPORT

REPORT NUMBER: 170120005SHF-BP-1

ORIGINAL ISSUE DATE: 2017-05-22

EVALUATION CENTER

Intertek Testing Services Ltd., Shanghai
Plant 7, No. 6958 Daye Road, Fengxian District, Shanghai, China

RENDERED TO

NewTechWood Ltd.

19111 Walden Forest Dr. Suite B Humble, Tx 77346, USA

PRODUCT EVALUATED

NewTechWood UltraShield

EVALUATION PROPERTY

As requested by the applicant, for details refer to attached pages(s).

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Report Template Revision Date: 2016/9/1



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Applicant:	NewTechWood Ltd.
Applicant Address:	19111 Walden Forest Dr. Suite B Humble, Tx 77346, USA
Attn:	Cliff Lam

Sample information:	
Product:	NewTechWood UltraShield
Model:	US01
Specification:	138.00*22.5mm (H1/H6)
Sample Quantity:	172 pieces
Sample ID:	S170120005SHF.001~028
Date Received:	2017-01-19
Date Test Conducted:	2017-01-20~2017-05-22

Conclusion:
For details refer to attached page(s).
The conclusions of this test report may not be used as part of the requirements for Intertek product certification. Authority to Mark must be issued for a product to become certified.



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Test Items, Method and Results:

EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results
Appearance	EN 15534-1:2014 Section 6.1 EN 15534-4: 2014 Section 4.3	Test specimens ware no crack, no blister and other visible defects.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Slipperiness (Pendulum test)	EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007 EN 15534-4: 2014 Section 4.4	Longitudinal direction: Mean: 45 Min.: 44 Horizontal direction: Mean: 56 Min.: 56	Pendulum value ≥ 36	Pass

Note:

1. Requirement is cited from EN 15534-4:2014 Table 1.
2. Test surface and direction please refer to below picture.

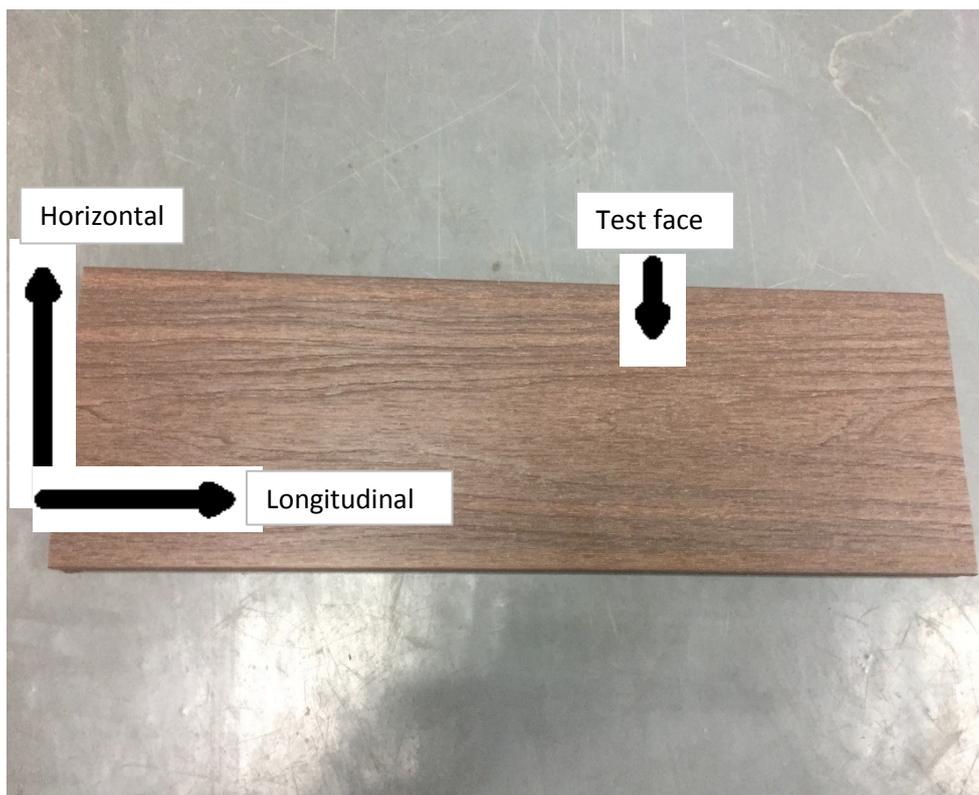


Fig 1. Pendulum test



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Test Items	Test Method	Test Results	Test requirements	Verdict
Slipperiness (Inclination plan test)	EN 15534-1:2014 Section 6.4.3	Angle: 29.2°	$\geq 24^\circ$	Pass
	EN 13451-1:2012 EN 15534-4: 2014 Section 4.4	Rating: Class C	Class C	

EN 13451-1:2012 Class of Slip resistance

Class	Angle
A	$12^\circ < X \leq 18^\circ$
B	$18^\circ < X \leq 24^\circ$
C	$X \geq 24^\circ$

Note:

1. Requirement is cited from EN 15534-4:2014 Table 1.
2. This test was conducted at the external qualified facility, located at Foshan.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Linear mass	EN 15534-1:2014 Section 6.5	Mean.: 3461 g/m	Individual values \geq 95% declared value by the manufacturer.	Pass
	EN 15534-4: 2014	Max.: 3519 g/m		
	Section 4.4	Min.: 3429 g/m		

Note:

1. Declared value:

Linear mass 3426 g/m

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Test Items	Test Method	Test Results
Dimensions	EN 15534-1:2014 Section 6.6 EN 15534-4: 2014 Section 4.4	Mean Thickness: 22.43 mm
		Mean Width: 137.95 mm
		Mean Length: 1000.35 mm
		Max. Deviation from straightness: 0.55 mm
		Max. Cupping: 0.16 mm

Note:

1. Declared value:

Thickness 22.5 mm
Width 138 mm
Length / mm

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Test Items	Test Method	Test Results	Test requirements	Verdict
Falling mass impact resistance	EN 15534-1:2014 Section 7.1.2.1 EN 15534-4: 2014 Section 4.5.1	Solid profile Max. Crack length (mm): No crack Max. Residual Indentation (mm): 0.10	None of 10 test specimens shall show a failure with a depth of residual indentation $\geq 0,5$ mm.	Pass

Note:

1. The falling mass was 1000g and the height was 700mm.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Flexural properties	EN 15534-1:2014 Annex A EN 15534-4: 2014 Section 4.5.2	Bending Strength: 36.3 Mpa Modulus of elasticity: 3.72 Gpa Maximum load: Mean: 4286 N Min.: 4080 N Deflection at 500N: Mean: 1.23 mm Max.: 1.30 mm	Flexural properties -F'max: Mean \geq 3300 N Min. \geq 3000 N -Deflection under a load of 500 N Mean \leq 2,0 mm Max. \leq 2,5 mm	Pass

Note:

1. The test span was 400 mm offered by applicant.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Creep behaviour	EN 15534-1:2014 Section 7.4.1 EN 15534-4: 2014 Section 4.5.3	Span: 400 mm	Known span in use	Pass
		Mean ΔS : 4.39 mm	Mean $\Delta S \leq 10$ mm	
		Max. ΔS : 4.48 mm	Max. $\Delta S \leq 13$ mm	
		Mean ΔS_r : 4.35 mm	Mean $\Delta S_r \leq 5$ mm	

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Test Items	Test Method	Test Results	Test requirements	Verdict
Creep behaviour (Unknown span in use)	EN 15534-1:2014 Section 7.4.2 EN 15534-4: 2014 Section 4.5.3	Span: 450 mm	Unknown span in use	Pass
		Mean C_f : 1.19	Mean $C_f \leq 6$	
		CV: 4 %	CV ≤ 15 %	
		Mean E_{rc} : 49 %	Mean $E_{rc} \geq 30$ %	
		CV: 7 %	CV ≤ 15 %	

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Test Items	Test Method	Test Results	Test requirements	Verdict
Moisture resistance under cyclic test conditions	EN 15534-1:2014 Section 8.3.2 EN 15534-4: 2014 Section 4.5.5.2	Original MOR: 36.3 Mpa After exposure, Mean MOR: 32.1 Mpa Decrease: 11.7 % Min MOR: 31.4 Mpa Decrease: 13.6 %	Decrease of bending strength, Mean \leq 20 % Max. \leq 30 %	Pass

Note:

1. The test span was 400 mm offered by applicant

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Test Items	Test Method	Test Results	Test requirements	Verdict
Swelling and water absorption (28 days immersion)	EN 15534-1:2014 Section 8.3.1 EN 15534-4: 2014 Section 4.5.5.3	Mean Swelling: 0.67 % in thickness 0.04 % in width 0.07 % in length Max. Swelling: 0.75 % in thickness 0.05 % in width 0.08 % in length Water absorption: Mean: 0.27 % Max.: 0.28 %	Means swelling: ≤ 4 % in thickness ≤ 0,8 % in width ≤ 0,4 % in length Max. swelling: ≤ 5 % in thickness ≤ 1,2 % in width ≤ 0,6 % in length Water absorption: Mean ≤ 7 % Max. ≤ 9 %	Pass

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Test Items	Test Method	Test Results	Test requirements	Verdict
Boiling Test	EN 15534-1:2014 Section 8.3.3 EN 15534-4: 2014 Section 4.5.5.4	Water absorption in weight: Mean: 0.49 % Max.: 0.55 %	Water absorption in weight: Mean \leq 7% Max. \leq 9%	Pass

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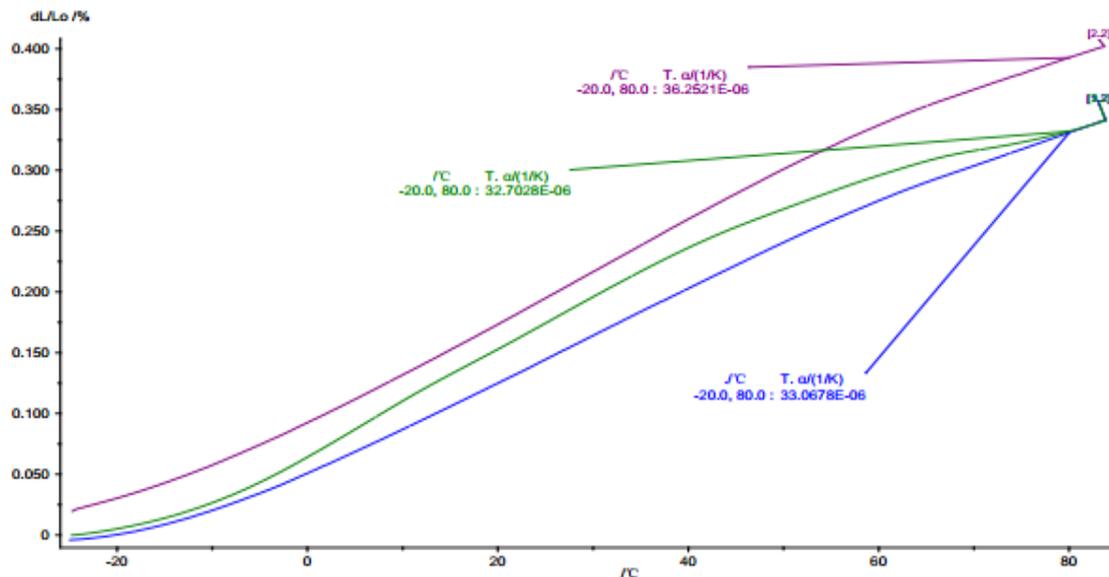
EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Linear thermal expansion coefficient	EN 15534-1:2014 Section 9.2 EN 15534-4: 2014 Section 4.5.6	Mean: 34.0 · 10 ⁻⁶ K ⁻¹	≤ 50 · 10 ⁻⁶ K ⁻¹	Pass

Note:

1. This test was conducted at the external approved facility, located at Shanghai

Test graph



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Test condition: Place the test pieces horizontally in the oven, maintain the test pieces in the oven for 60 min. at 100°C.

Test Items	Test Method	Test Results
Heat reversion	EN 15534-1:2014 Section 9.3 EN 479-1999 EN 15534-4 4.5.7	Test Temperature: 100°C Mean: 0.20 %

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Test condition: ambient air temperature $23\pm 2^{\circ}\text{C}$

Test Items	Test Method	Test Results
Heat build-up	EN 15534-1:2014 Section 9.4 EN 15534-4 4.5.7	Set temperature rise for use in horizontal position: 50 °C
		Actual temperature rise for black control specimen: 73.3 °C
		Temperature of test specimen: 46.9 °C
		Predicted heat build-up ΔT : -3.1 °C



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Test item: Single flame source test and Radiant heat source test

Test Method	Parameter	Test Results	Test Requirements	Classification
EN ISO 9239-1:2010	Critical flux (transverse), kW/m ²	7.7	Critical flux \geq 4.5 kW/m ²	C _{fi} -s1
	Critical flux (longitudinal), kW/m ²	7.3		
	Smoke production, % \times minutes	209	s1 =Smoke \leq 750 % \times minutes	
EN ISO 11925-2:2010 Exposure=15 s	F _s , mm	40	F _s \leq 150 mm within 20 s	

Note:

1. This test was conducted at the external approved facility, located at Guangzhou.
2. Requirement is cited from EN 13501-1:2007+A1:2009.



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EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Indenter: a hardened steel spherical body with diameter of 10 mm

Test load: Additional load of 2000N with preload of 20N

Indentation time: (25 ± 5) s

Recovery time: at least 24h

Test Items	Test Method	Test Results
Resistance to indentation	EN 15534-1:2014 Section 7.5	Brinell hardness: 72 Mpa
	EN 15534-4 4.5.7	Rate of elastic recovery: 69 %

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Test item: ISO 16869:2008 Plastics - Assessment of the effectiveness of fungistatic compounds in plastics formulations

Test organisms:

Aspergillus niger ATCC 6275, Chaetomium globosum ATCC 6205, Paecilomyces variotii CBS 628.66, Penicillium funiculosum ATCC 9644, Trichoderma longibrachiatum ATCC 13631

Test condition: 21days, Humidity >90%RH, Temperature:25°C

Rating evaluation:

Rating	Growth	Interpretation
0	No growth	The material is resistant to fungal attack
1	Initial growth (compared with the rest of the agar surface)	The material is partially protected against fungal attack or generally not susceptible to such attack
2	Obvious growth and sporulation	The material is susceptible to fungal attack

Test result:

Evaluation	Observed growth on specimens
0	No growth

Note:

This test was conducted at the external approved facility, located at Guangzhou.

Test Photos:

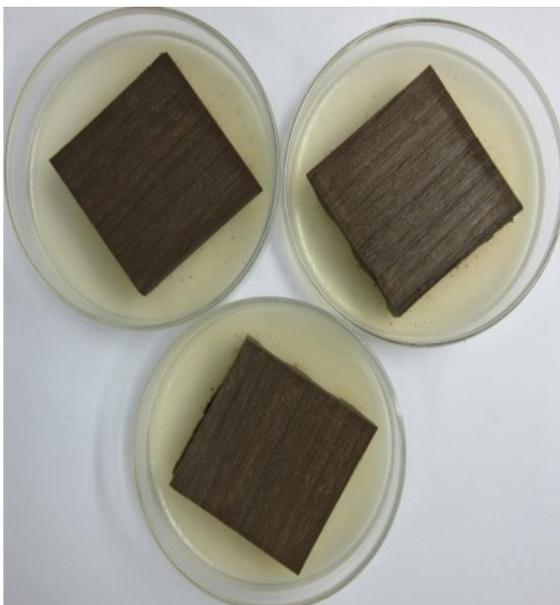


Fig 2. After Micro-fungi test

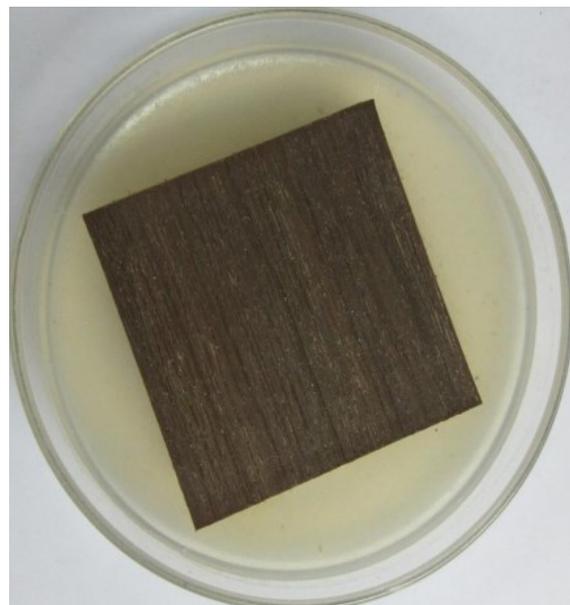


Fig 3. After Micro-fungi test

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Test Parameters:

1. Solution: (50±5) g/L NaCl
2. PH Value: 6.5~7.2
3. Test Duration: 96 hours

Test Items	Test Method	Test Results
Neutral salt spray test	EN 15534-1: 2014 Section 8.6 ISO 9227:2012 EN 15534-4 4.5.7	Exposure time (h): 96
		$\Delta L^* = -0.72$
		$\Delta a^* = 0.16$
		$\Delta b^* = 0.48$
		$\Delta E^* = 0.88$
		Grey Sale = 4-5

Test Photos:



Fig 4. After salt spray test

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Test Items	Test Method	Test Results	Test requirements	Verdict
Resistance to artificial weathering	EN 15534-4: 2014 Section 4.5.5.1 ISO 4892-2: 2013, cycle 1	After 2000h exposure: $\Delta L^* = -1.60$ $\Delta a^* = 0.32$ $\Delta b^* = 0.19$ $\Delta E^* = 1.65$ Grey Sale = 4	$\Delta L^*, \Delta a^*$ and Δb^* shall be delared	N/A

Test Photos:



Fig 5. After artificial weathering test

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Test Items	Test Method	Test Results	Test requirements	Verdict
Degree of chalking (for coated products only)	EN 15534-1:2014 Section 10.1 EN 15534-4: 2014 Section 4.5.7	Rating 0, no chalking	/	N/A

Test photo:



Fig 6. After chalking test

Appendix A: Sample received photo



Fig 7. Front view



Fig 8. Back view

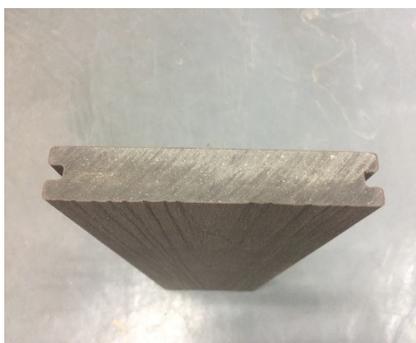


Fig 9. Section view

Approved by:



Name: Sun Sun

Title: Approver





Name: Jodie Zhou

Title: Reviewer



Name: Tod Qian

Title: Project Engineer

The End of Report

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